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Friesen et al.

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[54] **SHEET-LIKE DIAGNOSTIC DEVICE**

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[52] **U.S. Cl.** **436/7**

[58] **Field of Search** 436/514, 810; 435/7, 435/805, 810; 422/56, 169, 61, 101

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,847,553	11/1974	Verbeck .	
4,361,537	11/1982	Duetsch et al. .	
4,366,241	12/1982	Tom	435/7
4,446,232	5/1984	Liotta	436/514 X
4,459,358	7/1984	Berke	436/810 X
4,472,498	9/1984	Masuda	436/810 X
4,594,327	6/1986	Zuk	436/810 X
4,631,174	12/1986	Kondo	436/810 X

FOREIGN PATENT DOCUMENTS

0046004	2/1982	European Pat. Off. .
0100619	2/1984	European Pat. Off. .

OTHER PUBLICATIONS

European Patent Application of Fuji Photo Film Co., Ltd., Publication No. A2 0 097 952, dated Jan. 11, 1984.

West German Offenlegungsschrift No. 33 29 628, dated Feb. 23, 1984.

West German Offenlegungsschrift No. 30 43 608, dated Jun. 24, 1982.

West German Patentschrift No. 23 32 760, issued Mar. 4, 1982.

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[57] **ABSTRACT**

A solid diagnostic device for the quantitative determination of substances of biological affinity in biological fluids is described. A process is also described in which the biological fluid is brought into contact with a specific functional sector of the device, the fluid migrates through several functional sectors situated beside one another and containing suitable reagent components, and one or more substances of biological affinity are detected in such functional sectors which contain, for each substance to be detected, at least one combination partner of biological affinity, attached to a solid phase.

34 Claims, 2 Drawing Sheets